



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/591,026

08/29/2006

Naoki Kanie

129234

6639

25944 7590 08/19/2009  
OLIFF & BERRIDGE, PLC  
P.O. BOX 320850  
ALEXANDRIA, VA 22320-4850

EXAMINER

YANCHUK, STEPHEN J

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

08/19/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/591,026 | <b>Applicant(s)</b><br>KANIE, NAOKI |  |
|                              | <b>Examiner</b><br>STEPHEN YANCHUK   | <b>Art Unit</b><br>1795             |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 4/28/2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. All outstanding objections and rejections are withdrawn in light of applicant's arguments filed on 1/23/2009
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in prior office action.
3. The new grounds of rejection set forth below are necessitated by applicant's arguments filed on 4/28/2009. The following action is properly made non-final.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

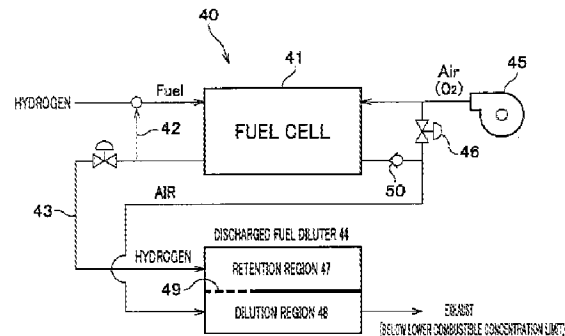
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7-9 are not positively recited 112 6<sup>th</sup> paragraph claims due to detailed limitations included in the claim pertaining to a "valve" as a control mean. These claims are not prosecuted in light of 112th 6<sup>th</sup>.

***Claim Rejections - 35 USC § 103***

1. Claim 1-2, 3-10 rejected under 35 U.S.C. 103(a) as obvious over Yamamoto et al. (PGPUB 2003/0077488) in further view of Manery (PGPUB 2003/0022031).

FIG. 8



Yamamoto Figure 8

Claim 1 and 10: Yamamoto teaches a fuel cell system comprising a means for diluting (44) hydrogen gas that has been purged from the fuel line via a purge pipe and valve (43). The system also comprises a change means (46) that increases the supplied quantity of oxidizing gas when there is an over abundance of hydrogen in the system so that the concentration of hydrogen being exhausted from the system is constant [Paragraph 78-80]. Yamamoto teaches discharging based on time intervals [Paragraph 64] and fails to teach a detection of abnormality to induce a purge.

Manery teaches a fuel purge valve (70) and a voltage sensor (output quantity) (S4) wherein when the voltage sensor drops below a threshold, a purge is induced [Paragraph 50]. The purge valve control is taught to be element CS4. It would have been obvious to incorporate the teachings of Manery with Yamamoto because Manery teaches an improved controller system for fuel cell systems that includes a battery [Paragraph 7]. One of ordinary skill in the art would search for such a control since Yamamoto is silent as to the various controllers that operate the system. The specific motivation for the purge valve sensor is that Manery teaches a sensed purge will

Art Unit: 1795

remove the impurities [Paragraph 70] and it would have been evident that Manery saves useable fuel.

Claim 2: Manery teaches a pressure sensor and a pressure relief valve [Paragraph 48]. This relief valve occurs on the inlet path for the fuel cell. It would have been recognizable to one of ordinary skill in the art that the increase in pressure relief valve is releasing hydrogen into the atmosphere. It would have been within the ability of one of ordinary skill in the art to incorporate this sensor into the purge valve sensor since the inlet and outlet pipe of Yamamoto are the same and it would go against the teachings of Yamamoto to release pure fuel into the air.

Claim 4: Yamamoto teaches that the exhaust must be below 4% [Paragraph 74] which would inhibit the occurrence of an abnormal oxidation reaction after the fuel gas is diluted. Yamamoto teaches releasing more oxidizing gas to compensate for the increased concentration [Paragraph 79-80]. In order to enable this concentration control, Yamamoto implies sensors to control the valves.

Claim 5 & 6: Yamamoto teaches a means for discharge of oxidization gas that increases when needed to keep hydrogen concentration at exhaust to 4%. In order to accomplish this, the back pressure must increase for the hydrogen part through the communication means (49).

Claim 7: Yamamoto teaches a valve as the means for discharging [Figure 8].

Claims 8-9 are rejected under 35 U.S.C. 103(a) as obvious over Yamamoto et al. (PGPUB 2003/0077488) in further view of Manery (PGPUB 2003/0022031).

Art Unit: 1795

Claim 8: Yamamoto teaches a valve (43) for purging, a dilution device (44), oxidizing gas supply (45) and means that can increase to keep hydrogen concentration constant (46, 50). Yamamoto fails to teach the specifics of the system including various sensors.

Manery teaches a fuel purge valve (70) and a voltage sensor (output quantity) (S4) wherein when the voltage sensor drops below a threshold, a purge is induced [Paragraph 50]. The purge valve control is taught to be element CS4. It would have been obvious to incorporate the teachings of Manery with Yamamoto because Manery teaches an improved controller system for fuel cell systems that includes a battery [Paragraph 7]. One of ordinary skill in the art would search for such a control since Yamamoto is silent as to the various controllers that operate the system. The specific motivation for the purge valve sensor is that Manery teaches a sensed purge will remove the impurities [Paragraph 70] and it would have been evident that Manery saves useable fuel.

Claim 9: Manery teaches various sensors and controllers to satisfy the external load [Paragraph 61]. Manery analyzes the fuel cell voltage and load demanded; if the fuel cell is not stabilized, a battery may be used to compensate to satisfy the load [Paragraph 87].

### ***Response to Arguments***

2. Applicant's arguments, filed 4/28/2009, have been fully considered and are persuasive.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN YANCHUK whose telephone number is (571)270-7343. The examiner can normally be reached on Monday through Thursday 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/STEPHEN YANCHUK/  
Examiner, Art Unit 1795

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795

Application/Control Number: 10/591,026  
Art Unit: 1795

Page 7